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CONSTRAINTS ASSOCIATED WITH THE PRODUCTION AND MARKETING OF MANGO IN CENTRAL PLAIN ZONE OF UTTAR PRADESH INDIA

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ABSTRACT

An examination of the situation shines light on a number of significant obstacles that mango producers in Central Plain Zone of Uttar Pradesh confront, both in terms of production and marketing. Among the most important problems are the high cost of elite planting materials (Fp3), impact of extreme weather (Fp6), the exploitation of middlemen (Fm1), and the perishable nature of mangoes (Fm2). It is of the utmost importance to give priority to addressing these top difficulties, particularly those that are associated with production, such as high costs and unpredictable weather, as well as marketing concerns, such as a lack of branding and the exploitation of intermediaries, in order to assist in improving productivity and profitability for mango farmers.

***Keywords*:** mango, production and marketing

Introduction

Over the past several years, horticulture has developed as a significant sector in the Indian economy, providing more than 30.4% of the agricultural GDP. Horticulture encompasses a wide range of crops, including fruits, vegetables, flowers, spices, medicinal plants, and aromatic plants.

Horticultural crops being highly seasonal and perishable are also capital and labour intensive and need care in handling and transportation. Their bulkiness makes the handling and transportation a difficult task, leading to huge post-harvest losses (Sudha, 2010).

Mango ("*Mangifera indica*") is a well-favoured fruit in Asia. It is renowned for its exceptional unique flavor and is referred to as the "King of Fruits." India is a leading global producer of mangoes, cultivating over fifty percent of the world's supply. It is a widely grown and commercially significant fruit in tropical and subtropical regions. High perishability, seasonal production, and inadequate post-harvest techniques contribute to significant post-harvest losses in substandard supply chain systems, hence diminishing the availability of mangoes for consumption, value addition, and export. Weak institutional arrangements, insufficient marketing facilities, and a lack of cooperation among multiple entities impede the

expansion of the mango sector. Mango growers' associations exist; nevertheless, they are unable to devise an organized production and marketing system to shorten the lengthy marketing routes, hence inflating profits for intermediaries and exacerbating marketing inefficiencies. This study addresses the aforementioned difficulties in the Central Plain Zone of Uttar Pradesh, where the mango cultivation region is notably extensive.

Materials and Methods

Selection of the study area

An appropriate sampling is essential for obtaining required information. Central Plain Zone of Uttar Pradesh will be selected due to higher area, and production of mango existing there. For the research study in the desired area, a purposive cum random sampling will be adopted for the selection of districts, blocks, villages, and farmers in the study area.

Among the 15 districts of Central Plain Zone of Uttar Pradesh, Lucknow, Unnao and Hardoi districts are the major mango producing districts with vast area under mango cultivation. Two blocks having maximum area and production of mango has been selected from each district i.e., Malihabad and Mal block of Lucknow, Safipur and Hasanganj block of Unnao, Sandila and Bharawan block of Hardoi. And at last, 4 Villages from each block are selected for research.

So, total of 240 farmers are selected from 3 Districts i.e., 10 from each village, 40 from each block and 80 from each district.

Analytical tool

Garrett's Ranking Technique

An effort was made to understand the constraints faced by the farmers and intermediaries during production and marketing activities. A list of constraints and factors were listed out based on preliminary survey and farmers and intermediaries were asked to rank the constraints according to their preference and the collected data were analyzed using

Garrett's Ranking Technique. The orders of merit given by the respondents were Converted into ranks by using the following formula (Henry and Woodworth, 1971).

$$\text{Percent position} = \frac{100 \times (R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Ranking given to the i^{th} attribute by the j^{th} individual

N_j = Number of attributes ranked by the j^{th} individual.

The per cent position of each rank obtained was converted into scores by referring Garrett's table. Mean score was estimated for each aspect. The mean scores for all the constraints faced by farmers and intermediaries during production and marketing were arranged in descending order and the constraints with the highest mean score was given first rank and it was considered as most important one and others followed in that order.

Result and Discussion

This study comprises the constraints faced by mango growers during the production and marketing of mangoes in Central Plain Zone of Uttar Pradesh. This study throws light on the human aspects of the challenges encountered by farmers, emphasizing how these constraints affect their livelihoods, decision-making, and community dynamics.

By employing Garrett Ranking as a methodological tool, this research seeks to systematically identify and prioritize the various constraints based on the lived experiences and perceptions of mango growers. This approach highlights the most significant barriers they face, allowing for a deeper understanding of the social, cultural, and economic factors that influence their farming practices and marketing strategies.

Furthermore, this objective aims to illuminate the emotional and psychological impacts of these constraints, such as the stress associated with financial instability and the fear of market volatility. By addressing these humanized aspects, the thesis aspires to provide actionable recommendations that empower farmers to overcome these challenges and improve their overall well-being.

Ultimately, the findings will serve as a resource for policymakers, agricultural practitioners, and community leaders to collaboratively develop solutions that support mango growers, enhance their productivity, and promote sustainable livelihoods in Uttar Pradesh.

Constraints Faced During Production of Mangoes

Table 1: Ranking of different constraints faced during production of mangoes

Factors	Percent Position	Garrett Value	Total Score	Average Score	Rank
F1	6.25	80	11983	49.93	7
F2	18.75	69	11835	49.31	8
F3	31.25	60	12400	51.67	1
F4	43.75	54	12324	51.35	3
F5	56.25	47	12231	50.96	4
F6	68.75	41	12351	51.46	2
F7	81.25	33	12016	50.07	6
F8	93.75	21	12060	50.25	5

F_p1: Depleting groundwater table
F_p2: Scarcity of genuine inputs & their elevated cost
F_p3: High cost of elite planting material
F_p4: Labor shortage & high wage rate
F_p5: Complex management practices
F_p6: Extreme or unpredictable weather conditions
F_p7: Outbreak of insects, pests & diseases
F_p8: Limited access to loan & insurance facilities

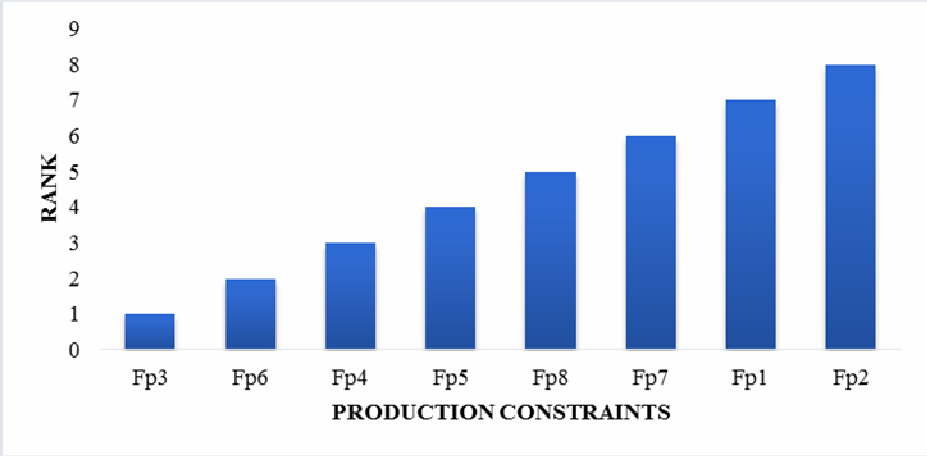

Figure 1: Graph depicting ranking of different production constraints

The analysis of the constraints faced by mango growers in Uttar Pradesh, as indicated in the table 1 using Garrett Ranking, reveals several critical challenges that impact their production and marketing efforts. Each factor's rank and average score highlight its significance in the overall farming experience. Detailed analysis of the constraints along with suggested solutions are enlisted below:

1. High Cost of Elite Planting Material (Rank 1, Average Score: 51.67)

Many growers feel the pinch of the high cost of quality planting materials, which limits their ability to invest in superior mango varieties.

Suggestions:

- We need to encourage research that produces more affordable elite planting materials.
- Offering subsidies could make it easier for farmers to access these quality seeds, helping them improve their yields.

2. Extreme or Unpredictable Weather Conditions (Rank 2, Average Score: 51.46)

Unpredictable weather is a major concern for farmers, as it can damage crops and affect quality.

Suggestions:

- Developing farming practices that can withstand extreme weather, like drought-resistant mango varieties, is essential.
- Investing in reliable weather forecasting can help farmers prepare and safeguard their crops from unexpected changes.

3. Labor Shortage & High Wage Rates (Rank 3, Average Score: 51.35)

Many farmers struggle with a lack of available labor and rising wage costs, making it challenging to manage their orchards effectively.

Suggestions:

- Promoting mechanization can ease the burden on manual labor and improve efficiency.

- Offering training programs can help local communities build a skilled labor force, making it easier for farmers to find help when they need it.

4. Complex Management Practices (Rank 4, Average Score: 50.96)

The complexity of management practices can overwhelm farmers, leading to inefficiencies in their operations.

Suggestions

- Providing straightforward training and extension services can help farmers navigate these challenges.
- Creating easy-to-use guides or mobile apps with management tips could empower farmers to make informed decisions.

5. Limited Access to Loan & Insurance Facilities (Rank 5, Average Score: 50.25)

Many growers find it difficult to access loans and insurance, which are crucial for investing in their farms and protecting their livelihoods.

Suggestions:

- Strengthening rural financial institutions to offer tailored loans can make a world of difference for farmers.
- Promoting affordable insurance options will help them shield against losses from climate change and market fluctuations.

6. Outbreak of Insects, Pests & Diseases (Rank 6, Average Score: 50.07)

Pests and diseases are constant threats that can devastate mango crops.

Suggestions:

- Implementing Integrated Pest Management (IPM) strategies can help manage pest populations more effectively while being environmentally friendly.
- Regular training on pest identification and control can equip farmers with the knowledge they need to protect their crops.

7. Depleting Groundwater Table (Rank 7, Average Score: 49.93)

The dwindling groundwater levels are a serious concern for farmers who depend on it for irrigation.

Suggestions:

- Encouraging water-saving practices like rainwater harvesting and drip irrigation can help conserve this vital resource.
- Promoting drought-resistant varieties can also lessen the pressure on groundwater supplies.

8. Scarcity of Genuine Inputs & Their Elevated Cost (Rank 8, Average Score: 49.31)

Access to quality agricultural inputs at reasonable prices is a significant challenge for farmers.

Suggestions:

- Establishing a network of reliable suppliers can ensure that farmers have access to genuine seeds and fertilizers.
- Introducing subsidies for these inputs can ease the financial burden on growers.

Constraints Faced during Marketing of Mangoes

Table 2: Ranking of different constraints faced during marketing of mangoes

Factors	Percent position	Garrett value	Total score	Average score	Rank
F1	6.25	80	12322	51.34	2
F2	18.75	69	12473	51.97	1
F3	31.25	60	11900	49.58	8
F4	43.75	54	11978	49.91	6
F5	56.25	47	12071	50.30	5
F6	68.75	41	11947	49.78	7
F7	81.25	33	12276	51.15	3
F8	93.75	21	12233	50.97	4

F_m1: Middlemen exploitation
F_m2: Perishable & bulky nature of mangoes
F_m3: Lack of branding & promotion
F_m4: Seasonal fluctuations in prices
F_m5: Insufficient transportation
F_m6: Lack of standardized quality control
F_m7: Limited access to market information
F_m8: Limited storage facilities

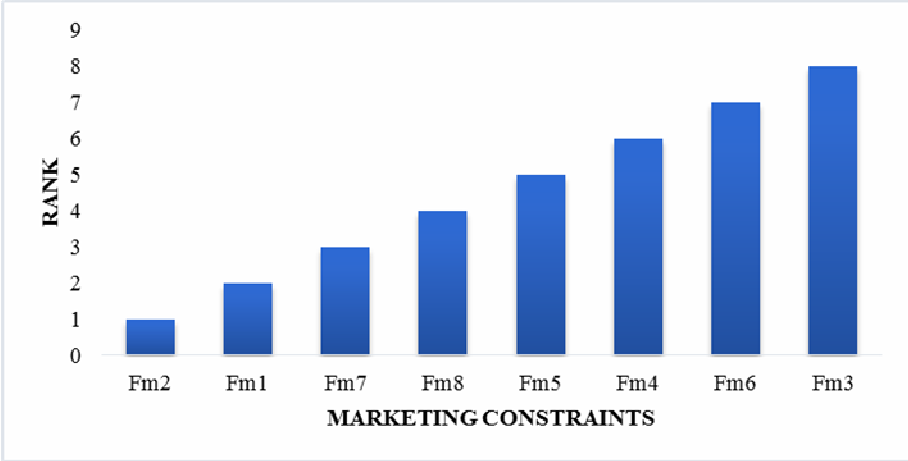

Figure 2: Graph depicting ranking of different marketing constraints

The analysis of the constraints faced by mango growers in Uttar Pradesh, as reflected in the above table 2 using Garrett Ranking, highlights several significant challenges affecting the marketing of mangoes. Each factor's rank and average score indicate its importance in shaping the experiences of mango growers. Thorough analysis of these constraints, along with suggestions for addressing them are given below:

1. F2: Perishable & Bulky Nature of Mangoes (Rank 1, Average Score: 51.97)

The perishable and bulky nature of mangoes is recognized as the most critical constraint, making it difficult for growers to manage their products effectively during transportation and storage.

Suggestions:

- Investing in better packaging technologies and techniques can help prolong the shelf life of mangoes during transport.
- Developing cold chain logistics and refrigerated transport systems can significantly reduce post-harvest losses and ensure that mangoes reach markets in good condition.

2. F1: Middlemen Exploitation (Rank 2, Average Score: 51.34)

Many growers feel that middlemen exploit their position, taking a significant share of profits and leaving farmers with inadequate returns.

Suggestions:

- Promoting direct marketing channels, such as farmer cooperatives and online marketplaces, can help farmers sell their mangoes directly to consumers and retailers.
- Implementing policy measures that support fair pricing and regulate middlemen can protect farmers' interests and ensure they receive fair compensation.

3. F7: Limited Access to Market Information (Rank 3, Average Score: 51.15)

Limited access to market information leaves farmers at a disadvantage when it comes to pricing and market trends, impacting their decision-making.

Suggestions:

- Establishing market information systems that provide timely updates on prices, demand, and trends can empower farmers to make informed choices.
- Training farmers to utilize digital platforms for accessing market data can further enhance their decision-making capabilities.

4. F8: Limited Storage Facilities (Rank 4, Average Score: 50.97)

A lack of adequate storage facilities leads to significant post-harvest losses, particularly given the perishable nature of mangoes.

Suggestions:

- Investing in community-based storage solutions, such as refrigerated warehouses, can help farmers store their produce for longer periods, reducing spoilage.
- Government incentives or partnerships with private sector players can encourage the development of better storage infrastructure.

5. F5: Insufficient Transportation (Rank 5, Average Score: 50.30)

Inadequate transportation options hinder farmers' ability to move their mangoes efficiently to market, often resulting in delays and losses.

Suggestions:

- Improving rural transportation infrastructure, such as roads and access routes to markets, is essential for facilitating better logistics.
- Exploring partnerships with logistics companies to create reliable transport networks specifically for perishable goods can enhance market access.

6. F4: Seasonal Fluctuations in Prices (Rank 6, Average Score: 49.91)

The volatility of mango prices due to seasonal fluctuations can make it difficult for growers to predict their income.

Suggestions:

- Introducing crop insurance products that cover price fluctuations can help farmers mitigate financial risks.
- Encouraging contract farming agreements can provide growers with more stable pricing and secure markets for their produce.

7. F6: Lack of Standardized Quality Control (Rank 7, Average Score: 49.78)

The absence of standardized quality control measures can result in inconsistencies in mango quality, affecting marketability.

Suggestions:

- Developing and implementing quality standards for mangoes can help ensure consistency and build consumer trust.
- Providing training for farmers on best practices for harvesting, handling, and grading mangoes can improve quality control.

8. F3: Lack of Branding & Promotion (Rank 8, Average Score: 49.58)

The lack of branding and promotion for mangoes limits their visibility in the market, affecting sales potential.

Suggestions:

- Creating marketing campaigns to promote local mango varieties can enhance their appeal and value.
- Supporting farmer cooperatives in developing branding strategies can help differentiate their products and attract consumers.

Conclusion

The analysis sheds light on several important challenges that mango growers in Uttar Pradesh face, both in production and marketing. Key issues include the high cost of elite planting materials (F_p3), the impact of extreme weather (F_p6), exploitation by middlemen (F_m1), and the perishable nature of mangoes (F_m2). It is crucial to prioritize addressing these top challenges—especially those related to production, like high costs and unpredictable weather, as well as marketing concerns such as lack of branding and middlemen exploitation—to help improve productivity and profitability for mango farmers.

While there are also lower-ranked factors, such as limited access to financial resources (F_p8), inadequate storage facilities (F_m8), and insufficient transportation (F_m5), these still play a role in the overall mango farming picture. Thus, including them in a comprehensive strategy to enhance the mango industry in the region is important.

By taking targeted action to address these key production and marketing issues, mango growers can boost their market presence and profitability. Each of the suggested solutions is aimed at helping farmers overcome specific challenges, ultimately fostering a more sustainable and competitive mango industry. Supporting farmers not only improves livelihoods but also strengthens the agricultural landscape in Central Plain Zone of Uttar Pradesh, contributing to the broader economic development of the region. These insights can serve as a valuable guide for policymakers, agricultural practitioners, and support organizations to create targeted interventions that truly meet the needs of mango growers, leading to a more resilient and profitable agricultural sector in Uttar Pradesh.

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